

FIREBAG® - GST® SAFETY DEVICES
FOR GAS SYSTEMS



PAGE 150

FIREBAG®
Thermally activated
safety device



PAGE 156

GST®
Excess flow valve
for gas systems

THERMALLY ACTIVATED
SAFETY DEVICE

FIREBAG®



APPLICATIONS

- Suitable for all types of gas as specified in EN 437 and DVGW G260/2013 standards (Methane, Butane, Propane).

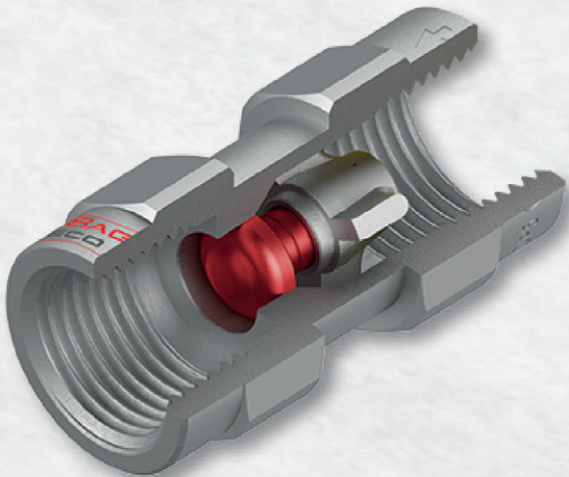


TECHNICAL DATA

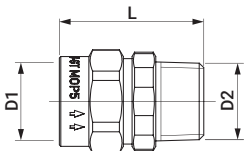
Temperature	-20 °C ÷ +80 °C
Working pressure	MOP 5 (5 bar)
Connections	EN 10226-1 R/Rp thread EN 1092-1 flange
High temperature resistance	HTB 5 bar 650 °C for 30' (GT5)
Activation temperature FIREBAG	100°C - 5K
Reference standards	DIN 3586 EU 2016 / 426 regulation EN 1092-1 flange

FEATURES

- Passive safety device for DIN 3586 certified gas systems.
- When the temperature of the device reaches 100 °C, the FIREBAG® permanently blocks the gas flow automatically to prevent saturation of the environment and the risk of explosion.
- Available as a single fitting or, thanks to its compactness, as a device built into the shut-off valves.
- Does not require maintenance.
- Located upstream of open-flame gas appliances or in areas with a fire risk.
- Produced by TECO since 1995.
- TECO can develop customised versions on request.

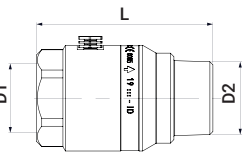


Firebag® FITTING, threaded version, female/male, DN15 / DN20 / DN25



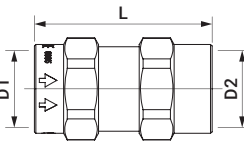
Code	DN	FIREBAG TAE	Connections		L	Pack
			D1	D2		
TASK100FM1	DN15	•	Rp 1/2"	R 1/2"	46	60
TASK200FM1	DN20	•	Rp 3/4"	R 3/4"	49	50
TASK300FM1	DN25	•	Rp 1"	R 1"	56	25

Firebag® FITTING, female/male threaded version, DN32 / DN40 / DN50



Code	DN	FIREBAG TAE	Connections		L	Pack
			D1	D2		
TASK400FM1	DN32	•	Rp 1 1/4"	R 1 1/4"	100	6
TASK500FM1	DN40	•	Rp 1 1/2"	R 1/2"	100	6
TASK600FM1	DN50	•	Rp 2"	R 2"	118	6

Firebag® FITTING, female/female threaded version, DN15 / DN20 / DN25

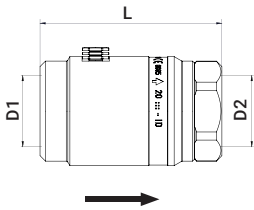


Code	DN	FIREBAG TAE	Connections		L	Pack
			D1	D2		
TASK100FF1	DN15	•	Rp 1/2"	Rp 1/2"	54	60
TASK200FF1	DN20	•	Rp 3/4"	Rp 3/4"	61	30
TASK300FF1	DN25	•	Rp 1"	Rp 1"	69	20

FIREBAG® THERMALLY ACTIVATED
SAFETY DEVICE

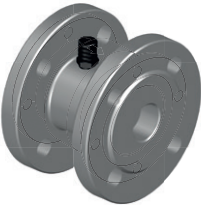


Firebag® FITTING, female/female threaded version, DN32 / DN40 / DN50

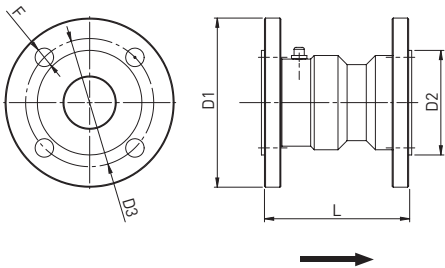


Code	DN	FIREBAG TAE	Connections		L	Pack
			D1	D2		
TASK400FF1	DN32	•	Rp 1 1/4"	Rp 1 1/4"	100	6
TASK500FF1	DN40	•	Rp 1 1/2"	Rp 1 1/2"	100	6
TASK600FF1	DN50	•	Rp 2"	Rp 2"	118	6

Firebag® FITTING, flanged version, DIN EN 1092-1

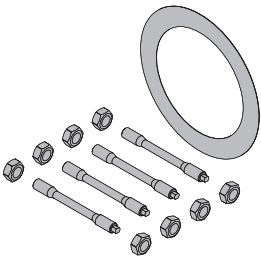


- MOP 5 (5 bar)

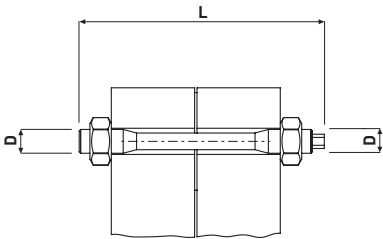


Code	DN	FIREBAG TAE	Connections			F	L	Holes	Pack
			D1	D2	D3				
TASF02500	DN25	•	115	68	85	14	80	4	1
TASF03200	DN32	•	140	78	100	18	90	4	1
TASF04000	DN40	•	150	88	110	18	90	4	1
TASF05000	DN50	•	165	102	125	18	110	4	1
TASF06500	DN65	•	185	122	145	18	125	4	1
TASF08000	DN80	•	200	138	160	18	125	8	1
TASF10000	DN100	•	220	158	180	18	175	8	1
TASF12500	DN125	•	250	188	210	18	175	8	1
TASF15000	DN150	•	285	212	240	22	200	8	1
TASF20000	DN200	•	340	268	295	22	200	12	1

MS1 assembly kit for FIREBAG® fitting, flanged version



- MOP 5 (5 bar)

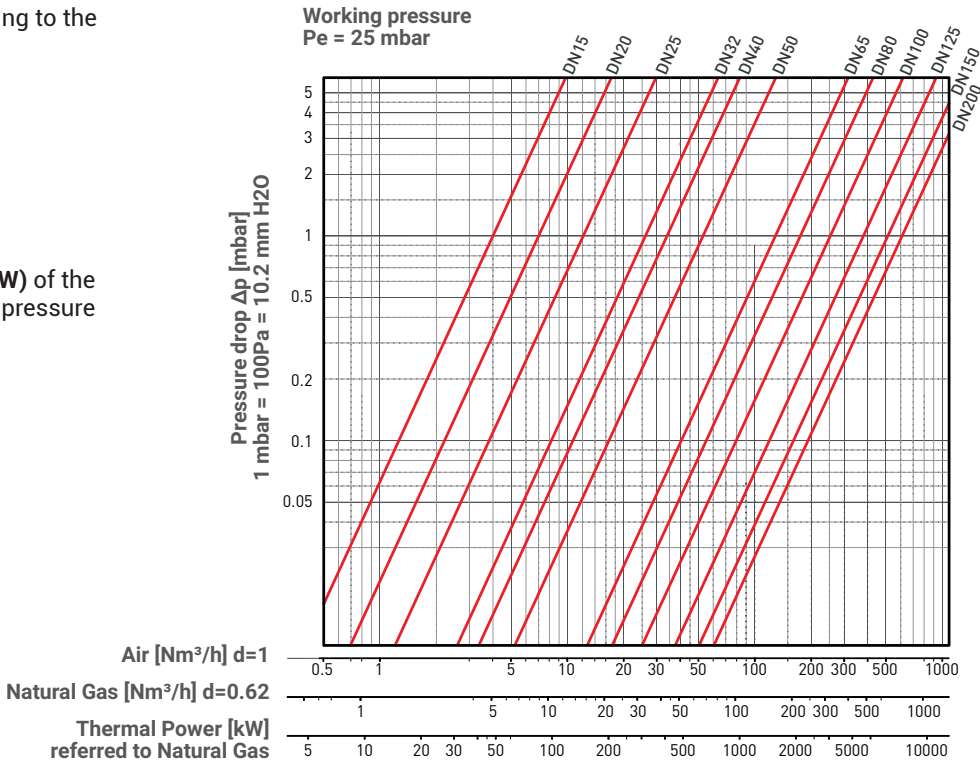


Code	DN
MS1025	DN25
MS1032	DN32
MS1040	DN40
MS1050	DN50
MS1065	DN65
MS1080	DN80
MS1100	DN100
MS1125	DN125
MS1150	DN150

Choosing the FIREBAG®

The FIREBAG® must be chosen according to the following parameters:

- According to the working pressure:
Max. 5 bar
- According to the application:
Natural Gas
LPG
- According to the **installed power (in kW)** of the individual appliances and the relative pressure drop.

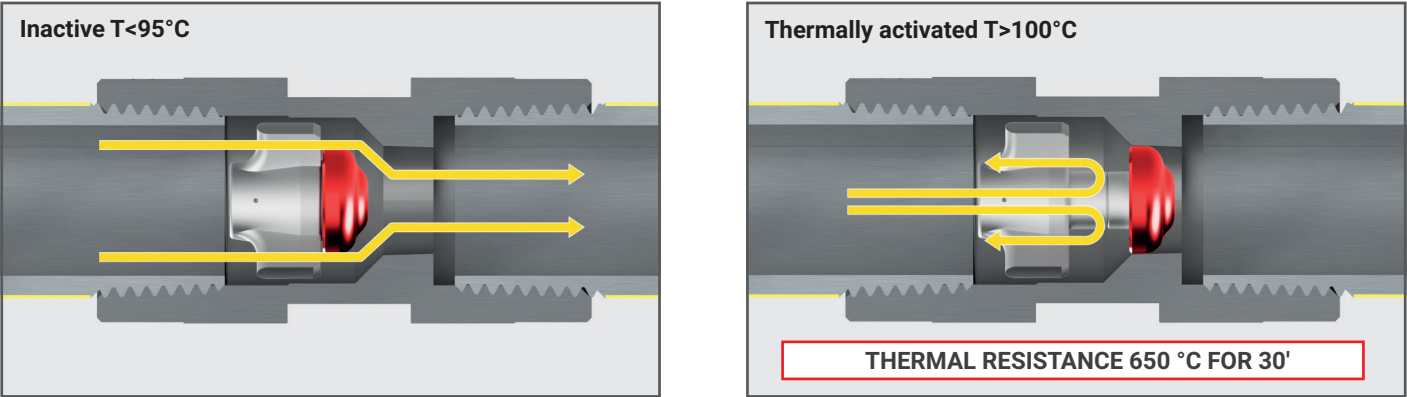


FIREBAG® THERMALLY ACTIVATED
SAFETY DEVICE



Operation of the FIREBAG®

FIREBAG® is composed of an external steel body and an internal thermosensitive device.
When the external temperature reaches 100°C-5K, the metal alloy that holds the cut-off to the cartridge melts, and the compression force of the spring pushes the cut-off against the gas flow orifice, closing it completely.
The **FIREBAG®** seals the system for 30 minutes at up to 650 °C in accordance with DIN 3586.



Valves with built-in FIREBAG® thermal device

Valves for gas meters			
G6 see page 132	KM3 see page 128	G5 see page 126	
Threaded and flanged valves for gas systems		Valves for gas appliances	
G4 see page 138	G2 see page 142	R2 see page 144	R4 see page 146

Safety of FIREBAG® THERMAL DEVICES

FIREBAG® prevents gas from leaking out of the distribution network in the event of fire, thereby limiting the spread of flames.

Installing **FIREBAG®** in a gas distribution system raises the safety level because it intervenes even when the cause of the fire is not related to the system itself, making it a kind of passive safety.

Moreover:

- it is maintenance free;
- it does not require periodic checks to ensure correct operation as needed for active devices;
- it cannot be disabled by an external action.

It remains functional even while the **FIREBAG®** device is undergoing maintenance.
That is why since 1995 the German technical regulations (**TRGI**) prescribe the use of **FIREBAG®** upstream of the gas appliances.

Reliability of FIREBAG® THERMAL DEVICES

The **FIREBAG®** safety device must guarantee long-term operational reliability in accordance with the prescribed parameters.

Failure to operate or unwanted closure could create very hazardous critical conditions; for this reason, despite its simple construction, the **FIREBAG®** undergoes strict checks during the manufacturing process.

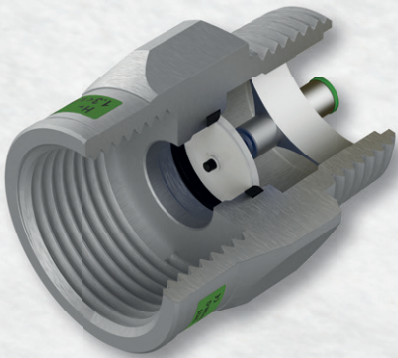


EXCESS FLOW VALVE
FOR GAS SYSTEMS

GST®



FIND OUT MORE



APPLICATIONS

- Suitable for all types of gas as specified in EN 437 and DVGW G260/2013 standards (Methane, Butane, Propane).



TECHNICAL DATA

Temperature	-20 °C ÷ +60 °C
Working pressure	15–100 hPa
Connections	EN 10226-1 R/Rp thread
Pressure drop	$\Delta p < 0.5$ hPa
Closure factor (f_s ($f_s = V_s / V_{GAS}$))	f_s min. 1.30 f_s max. = 1.45
Overflow value VL	37.5 l/h at 100 mbar (gas)
Heat resistance	650 °C for 30' externally
Device heat resistance GST	120 °C for 10' (with outside temperature at 200 °C)
Reference standards	DIN 30652-1 DVGW TRGI 2018 DVGW TRF 2021

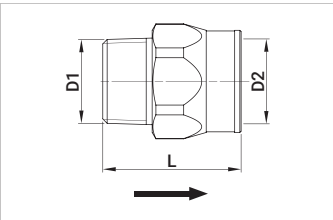
FEATURES

- Excess flow valve for gas systems.
- GST® is a DIN 30652-1 certified device that blocks the gas flow automatically when the flow rate exceeds the minimum trip threshold of the device (in the event of tampering, accidental system disconnection, e.g. in a fire or if the pipes burst).
- The GST® is equipped with an automatic reset system.
- Available as a single fitting or, thanks to its compactness, as a device built into the shut-off valves.
- Does not require maintenance.
- Produced by TECO since 2002.
- TECO can develop customised versions on request.

GST® fitting, male/female threaded version



Installation position
horizontal and vertically
upward

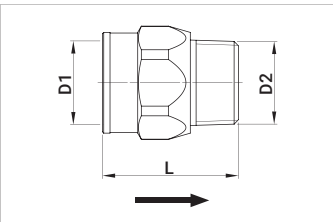


Code	DN	GST GS m³/h	Connections		L	Pack
			D1	D2		
GS01110100	DN15	$V_{gas} = 1.6$	R 1/2"	Rp 1/2"	52	20
GS01210100	DN15	$V_{gas} = 2.5$	R 1/2"	Rp 1/2"	52	20
GS02210200	DN20	$V_{gas} = 2.5$	R 3/4"	Rp 3/4"	52	15
GS02310200	DN20	$V_{gas} = 4.0$	R 3/4"	Rp 3/4"	52	15
GS03210300	DN25	$V_{gas} = 2.5$	R 1"	Rp 1"	54	10
GS03310300	DN25	$V_{gas} = 4.0$	R 1"	Rp 1"	54	10
GS03410300	DN25	$V_{gas} = 6.0$	R 1"	Rp 1"	54	10
GS04510400	DN32	$V_{gas} = 10.0$	R 1 1/4"	Rp 1 1/4"	67	6
GS05610500	DN40	$V_{gas} = 16.0$	R 1 1/2"	Rp 1 1/2"	75	6
GS06610600	DN50	$V_{gas} = 16.0$	R 2"	Rp 2"	80	6

GST® fitting, female/male threaded version



Installation position
horizontal and vertically
upward

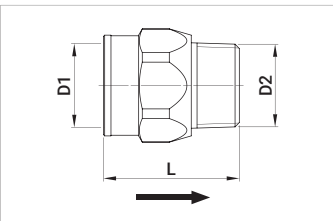


Code	DN	GST GS m³/h	Connections		L	Pack
			D1	D2		
GS01120100	DN15	$V_{gas} = 1.6$	Rp 1/2"	R 1/2"	52	20
GS01220100	DN15	$V_{gas} = 2.5$	Rp 1/2"	R 1/2"	52	20
GS02220200	DN20	$V_{gas} = 2.5$	Rp 3/4"	R 3/4"	46	15
GS02320200	DN20	$V_{gas} = 4.0$	Rp 3/4"	R 3/4"	46	15
GS03220300	DN25	$V_{gas} = 2.5$	Rp 1"	R 1"	54	10
GS03320300	DN25	$V_{gas} = 4.0$	Rp 1"	R 1"	54	10
GS03420300	DN25	$V_{gas} = 6.0$	Rp 1"	R 1"	54	10
GS04520400	DN32	$V_{gas} = 10.0$	Rp 1 1/4"	R 1 1/4"	61	6
GS05620500	DN40	$V_{gas} = 16.0$	Rp 1 1/2"	R 1 1/2"	68	6
GS06620600	DN50	$V_{gas} = 16.0$	Rp 2"	R 2"	75	6

GST® fitting, male/female threaded version



Installation position
vertically downward



Code	DN	GST GS m³/h	Connections		L	Pack
			D1	D2		
GSW2210200	DN20	$V_{gas} = 2.5$	R 3/4"	Rp 3/4"	52	15
GSW2310200	DN20	$V_{gas} = 4.0$	R 3/4"	Rp 3/4"	52	15
GSW3210300	DN25	$V_{gas} = 2.5$	Rp 1"	R 1"	54	10
GSW3310300	DN25	$V_{gas} = 4.0$	Rp 1"	R 1"	54	10
GSW3410300	DN25	$V_{gas} = 6.0$	Rp 1"	R 1"	54	10
GSW4510400	DN32	$V_{gas} = 10.0$	R 1 1/4"	Rp 1 1/4"	67	6

i Versions available on request.

GST® EXCESS FLOW VALVE FOR GAS SYSTEMS

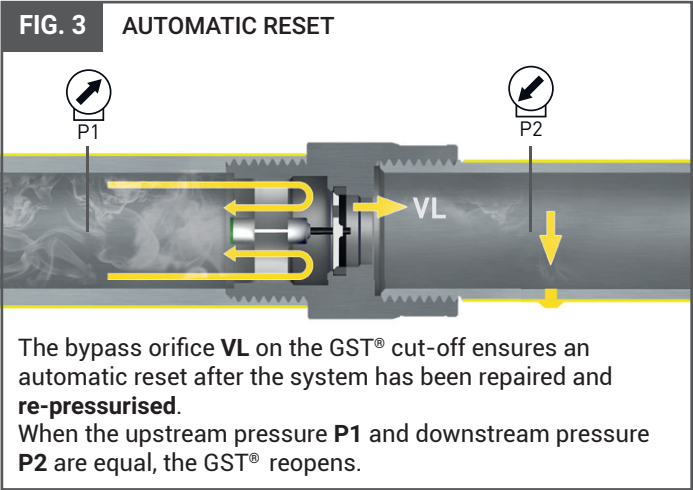
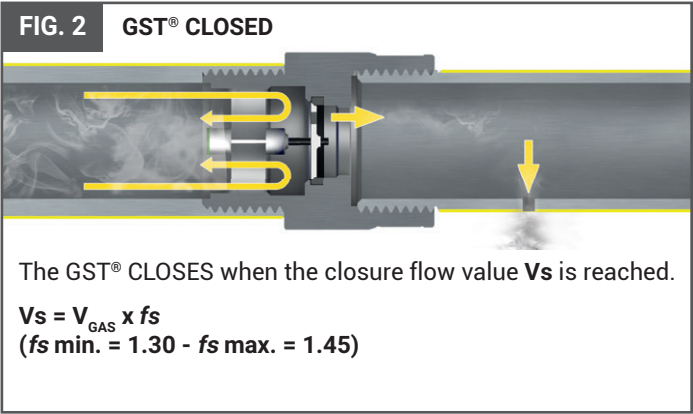
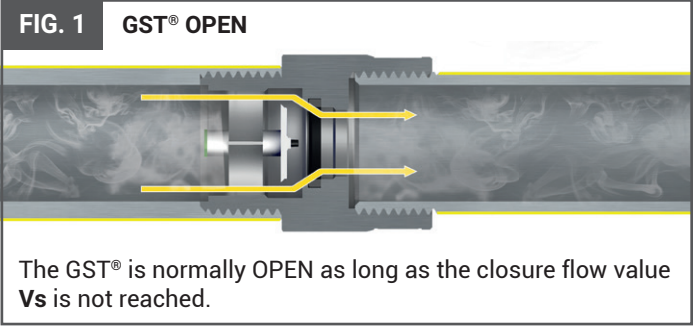


Operation of the GST®

Key	V_{GAS}	Nominal gas flow rate of GST® (d=0.64)
	fs	Closure factor ($fs=Vs / V_{GAS}$) fs min. = 1.30 fs max. = 1.45
	Vs	Gas closure flow rate (d=0.64) Vs = V_{GAS} x fs
	VL	Flow rate through the bypass orifice ≤ 37.5 l/h at 100 mbar (gas)

When inserted in the system, the GST® remains inactive (FIG.1) until the closure flow rate (**Vs**) is reached. As soon as the flow reaches the closing value (**Vs**) due to any accidental cause, the GST® closes instantly (FIG.2).

The bypass orifice on the cut-off resets it automatically. This orifice creates a pressure balance upstream and downstream of the device through the **VL** overflow, once the conditions that caused the GST® to close have been removed (FIG.3).



Valves with built-in GST® device

Valves for gas meters		
G6 see page 132	KM3 see page 128	G5 see page 126

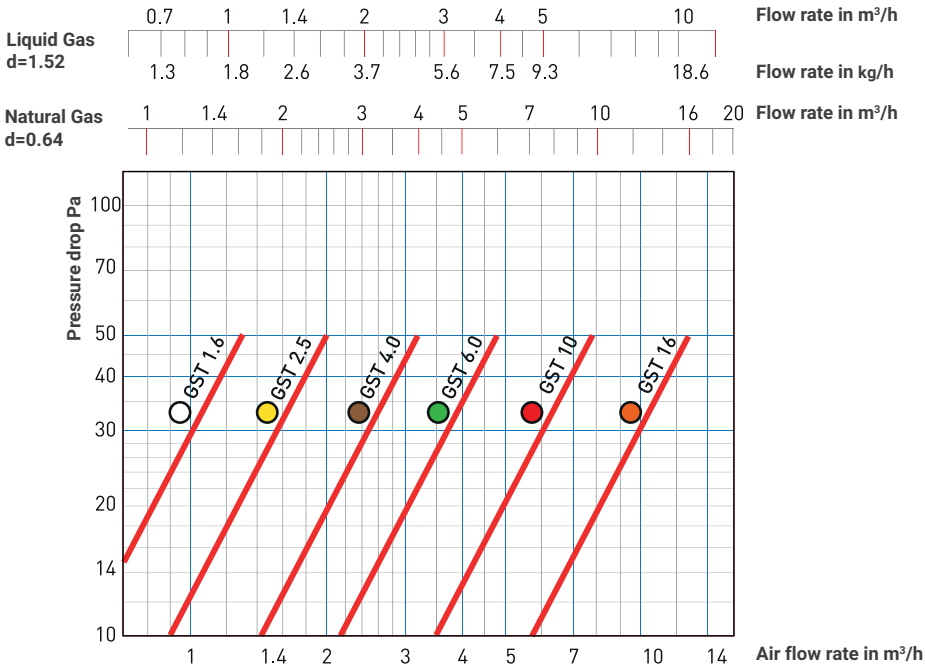
Choosing the GST®

The GST must be chosen according to the following parameters:

- According to the working pressure:
Pe 15–100 hPa
- According to the application:
Natural Gas
LPG
- According to the installed power given by the sum of the individual downstream appliances:
Σ kW
- According to the type of installation:
Main pipeline
Branch pipeline
- According to the type of system piping:
Metal (M)
Plastic (K)



PRESSURE DROP GRAPH



PARAMETERS FOR CHOOSING THE GST® TRG 2008 METAL PIPES		
GST marking identification	Power in kW	
	Branch pipeline	Main pipeline
V _{GAS} =2.5 m³/h	≤ 17	≤ 21
V _{GAS} =4.0 m³/h	18 – 27	22 – 34
V _{GAS} =6.0 m³/h	28 – 41	35 – 51
V _{GAS} =10 m³/h	42 – 68	52 – 86
V _{GAS} =16 m³/h	69 – 110	87 – 138

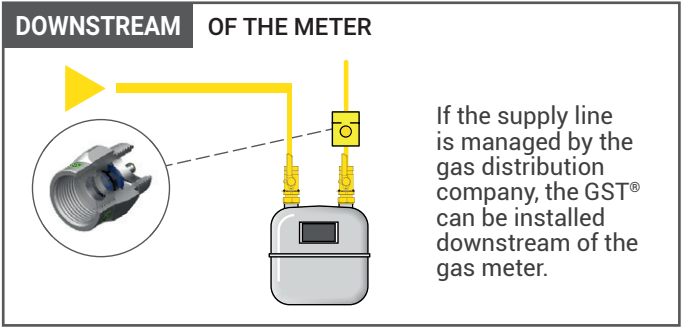
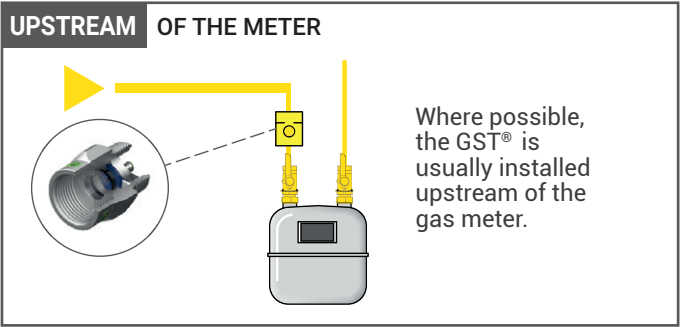
PARAMETERS FOR CHOOSING THE GST® TRG 2008 PLASTIC PIPES		
GST marking identification	Power in kW	
	Branch pipeline	Main pipeline
V _{GAS} =1.6 m³/h	≤ 11	≤ 13
V _{GAS} =2.5 m³/h	12 – 17	14 – 22
V _{GAS} =4.0 m³/h	18 – 27	23 – 34
V _{GAS} =6.0 m³/h	28 – 41	35 – 51
V _{GAS} =10 m³/h	42 – 68	52 – 86
V _{GAS} =16 m³/h	69 – 110	87 – 138

PARAMETERS FOR CHOOSING THE GST® TRF-2012 LIQUEFIED GAS		
GST marking identification	Power in kW	
	Branch pipeline	Main pipeline
V _{GAS} =1.6 m³/h	≤ 18	≤ 25
V _{GAS} =2.5 m³/h	19 – 28	26 – 40
V _{GAS} =4.0 m³/h	29 ÷ 45	41 ÷ 64
V _{GAS} =6.0 m³/h	46 ÷ 67	65 ÷ 96
V _{GAS} =10 m³/h	68 ÷ 112	97 ÷ 160

THE LABEL COLOURS IDENTIFY THE GST® TYPE					
GST GS m³/h					
V _{GAS} =1.6	V _{GAS} =2.5	V _{GAS} =4.0	V _{GAS} =6.0	V _{GAS} =10.0	V _{GAS} =16.0

i Further technical data available on request.

GST® installation examples



i The choice of GST® is the same regardless of whether it is upstream or downstream of the meter.